

REMARKS

Applicants respectfully request consideration of the following remarks.

Rejections Under 35 U.S.C. § 102(e)

In the office action dated March 27, 2006, claims 1, 2, 6, 9, 13, 23, 25 and 27 stand rejected under 35 U.S.C. §102(e) as being anticipated by Matsushima (US 6,232,652). The office action asserts Matsushima discloses applicants' independent claims 1 and 23, however, applicants contend that Matsushima fails to disclose at least the claim limitation of "a layer of sealant disposed between and contacting the substrate and the lid to bond the lid to the substrate" recited in amended independent claims 1 and 23.

Matsushima shows and describes the required elements, in all embodiments, of two separate layers of adhesive tape 3 and an 'annular ring' 4 (ring member) interposed between a planar heat spreader 1 and a BGA substrate 7. For example, Figs. 1 and 5a-b clearly depict the adhesive tape disposed in one instance between and contacting the planar heat spreader and the annular ring, and in the other instance between and contacting the annular ring and the BGA substrate. In no instance, however, does a layer of adhesive tape in Matsushima contact both the planar heat spreader and the substrate. Therefore, Matsushima fails to disclose applicants' amended independent claims 1 and 23, which clearly recite "*a layer of sealant disposed between and contacting* the substrate and the lid to bond the lid to the substrate", (emphasis provided).

For at least the reason described above, applicants respectfully submit that the amended claims 1 and 23 fully traverse the asserted 35 USC 102(e) rejections. Therefore, applicants respectfully request withdrawal of the rejections of independent claims 1 and 23. Inasmuch as claims 2, 6, 9, and 13 depend from and include the limitations of claim 1, and claims 25 and 27

likewise depend from and include the limitations of claim 23, applicants also request withdrawal of the 35 USC 102(e) rejections from dependent claims 2, 6, 9, 13, 25 and 27.

Rejections Under 35 U.S.C. § 103(a)

Independent Claims 1 and 23

In the office action dated March 27, 2006, claims 1-3, 6, 9, 13, 23, 25 and 27 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hideyo (JP-63084051) in view of Matsushima (US 6,232,652). Applicants respectfully submit that the combined references fail to teach applicants claims as asserted by the office action.

The office action asserts that although the one break in the sealant of Hideyo does not remain subsequent to the substrate and lid being assembled together, Matsushima teaches a package comprising “a sealant . . . to bond the lid to the substrate wherein the sealant includes at least one break (slit 4) that remains after the substrate and the lid were assembled together”, (office action, page 5, section 12). The office action asserts that “it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a sealant having at least one break that remains [as in Matsushima] after the substrate and lid were assembled together in Hideyo’s invention”. However, applicants respectfully point out that at the time of the invention, there would be no motivation to combine the references, as Hideyo expressly teaches away from a sealant having at least one break.

Hideyo describes a need to form a package that is hermetically sealed, and which *retains nitrogen* in the ‘encasing’ after bonding the lid to the ‘substrate’¹. Hideyo describes that providing an unbroken adhesive pattern prior to and during the sealing process detrimentally

deforms the resin layer as a result of “the gas in the encasing 4 that underwent thermal expansion in the...heating/melting stage”, stating that such deformation “adversely affect[s] the benefit of hermetic sealing”. Therefore, in an attempt to solve this problem,

gas-releasing slits 8 are provided on at least two sides approximately in the middle of each side in the square resin layer...[h]owever, during the sealing process, the slits 8 sometimes remain without being completely eliminated. In such a situation, it is impossible to retain the nitrogen gas in the encasing...and this results in wastage of the costly solid-state imaging device 1, the color filter 2, and the other components.

Thus, Hideyo clearly describes a need to retain nitrogen in an ‘encasing’ by providing a hermetic seal between a ‘lid’ and a ‘substrate’. Hideyo expressly states that slits remaining after sealing results in “wastage of the costly . . . components”. Hideyo expressly teaches away from combining the package of Hideyo with the sealant of Matsushima, to have at least one break remaining after the substrate and lid are assembled together, since the combination would fail to retain nitrogen in the ‘encasing’, leading to wastage of costly components.

For at least the reason that Hideyo expressly teaches away from the asserted combination of Hideyo with Matsushima, one of ordinary skill in the art would not have been motivated to combine the references at the time of the invention. Thus, applicants respectfully submit that the combination is improper, and does not form the basis of a proper 35 USC 103(a) rejection. Therefore, applicants request withdrawal of the rejection from independent claims 1 and 23, as well as from claims 2-3, 6, 9 and 13, and from claims 25 and 27, which depend from and include the limitations of independent claims 1 and 23, respectively.

Claims 7, 8, 10, and 26

¹ The Hideyo reference was translated by Linguattheque, a Los Angeles, CA based translation service, (Ph. 800-440-5344; e-mail lingua@linguattheque.com). A copy of the translated reference is attached to this response as “Addendum A”.

The office action also rejects claims 7, 8, 10 and 26 under 35 USC 103(a) as being unpatentable over Matsushima, asserting that Matsushima “shows most aspects of the instant invention, except:

1. with regard to claims 7 and 26, one break in each side of the substantially rectangular pattern of sealant; and,
2. with regard to claims 8 and 10, four breaks comprising a minimum 10% of the rectangular pattern of sealant.

The office action asserts, essentially, that each of these differences is insufficient to distinguish the claimed invention absent reference in the specification to the criticality of the limitations.

Applicants, without accepting these arguments, respectfully submit they are moot in view of amended independent claims 1 and 23. As stated earlier, in as much as Matsushima fails to disclose “a layer of sealant disposed between and contacting the substrate and the lid to bond the lid to the substrate”, amended independent claims 1 and 23 are clearly and fully distinguished from Matsushima, which requires two separate layers of adhesive, neither layer contacting the substrate and the lid.

As claims 7, 8 and 10, and claim 26 depend from and include the distinguishing limitations of amended independent claims 1 and 23, respectively, applicants respectfully submit the 35 USC 103(a) rejections of these claims are fully traversed. Therefore, applicants respectfully request withdrawal of the 35 USC 103(a) rejections from claims 7, 8, 10 and 26.

Claims 5, and 11-12

Claim 5 is rejected in the office action under 35 USC 103(a) as being unpatentable over Matsushima in view of Chen et al (US6,125,180), (‘Chen’). The office action admits that

Matsushima fails to disclose vent holes formed through the lid, but asserts that Chen so discloses. The office action also rejects claims 11 and 12 under 35 USC 103(a) as being unpatentable over Matsushima in view of Harper. The office action admits that Matsushima fails to disclose the specific material used to make the substrate, such as an organic material, but asserts that Harper so discloses. The office action further admits that the combination of Matsushima with Harper fails to disclose that the polyimides are susceptible of absorbing moisture and releasing it as steam causing a pressure increase inside the package, but asserts that this phenomenon is inherent.

Without accepting these arguments, applicants respectfully submit they are moot in view of amended independent claim 1. As stated earlier, in as much as Matsushima fails to disclose “a layer of sealant disposed between and contacting the substrate and the lid to bond the lid to the substrate”, amended independent claim 1 is clearly and fully distinguished from Matsushima, which requires two separate layers of adhesive, neither layer contacting the substrate and the lid. Both Chen and Harper, when combined with Matsushima, still fail to provide the missing claim element, and so fail to teach or suggest at least one limitation of applicant’s independent claims 1.

As claims 5, 11 and 12 depend from and include the distinguishing limitations of amended independent claim 1, applicants respectfully submit the 35 USC 103(a) rejections of these claims are fully traversed. Therefore, applicants respectfully request withdrawal of the 35 USC 103(a) rejections of claims 5, 11 and 12.

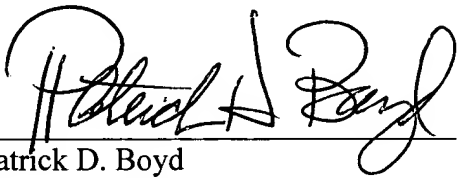
CONCLUSION

In light of the points and arguments set forth herein, applicants respectfully submit that the rejections have been properly overcome, and the claims are allowable as previously presented.

Please charge any shortages and credit any overages to Deposit Account No. 02-2666.

Respectfully submitted,

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Patrick D. Boyd
Registration No. 54,671

12400 Wilshire Blvd.
Seventh Floor
Los Angeles, CA 90025
(503) 439-8778

ADDENDUM 'A'

(19) JAPANESE PATENT OFFICE (JP)

(12) OFFICIAL GAZETTE FOR UNEXAMINED PATENT APPLICATIONS (A)

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(72) Inventor: Toshio Sekiguchi

Matsushita Electric Industrial Co., Ltd.

1006 Oazana Kadoma, Kadoma-shi, Osaka-fu

(72) Inventor: Hideyo Nozaki

Matsushita Electric Industrial Co., Ltd.

1006 Oazana Kadoma, Kadoma-shi, Osaka-fu

(74) Agent: Toshio Nakao (and one associate)

(71) Applicant: Matsushita Electric Industrial Co., Ltd.

1006 Oazana Kadoma, Kadoma-shi, Osaka-fu